



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/796,976 | 03/11/2004 | Ho-Chieh Yu | BHT-3230-98 | 4047 |

7590 06/01/2006

TROXELL LAW OFFICE PLLC
SUITE 1404
5205 LEESBURG PIKE
FALLS CHURCH, VA 22041

| |
|----------|
| EXAMINER |
|----------|

WARTALOWICZ, PAUL A

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

1754

DATE MAILED: 06/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

o

Office Action Summary

Application No.

10/796,976

Applicant(s)

YU ET AL.

Examiner

Paul A. Wartalowicz

Art Unit

1754

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☒ Claim(s) 1,3,4,7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/9/04.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 6, and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, the recitation on lines 7-8; "doping different alkaline-earth metals to said A" renders the claim indefinite. It is unclear whether the different alkaline metals are included in the general form of materials for cathode or in the instant case the different alkaline-earth metals are added to the formula such that the doping of the alkaline-earth metals would change the formula of the general form of materials for cathode.

Claim 3 recites the limitation "lanthanum (La)" in line 1 which perhaps should be changed to "lanthanide" which does have antecedent basis. There is insufficient antecedent basis for this limitation in the claim.

In claim 6, the recitation on lines 1-2; "wherein said $\text{Ln}_{1-x}\text{A}_x\text{Cu}_{1-y}\text{B}_y\text{O}_{2.5\pm\delta}$ is operating temperature in a range of 400-800 degrees Celsius" renders the claim indefinite. It is unclear what operating conditions are being referred to in the claim.

Claim 7 recites the limitation "the $\text{ABO}_{2.5\pm\delta}$ " in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

Clarification and/or correction is required.

Claim Objections

Claim 1 is objected to because of the following informalities: The following typographical error appears in claim 1. It appears "conversing" in line 8 is intended to be --converting--. Appropriate action is required.

Claim 3 is objected to because of the following informalities: The following typographical errors appear in claim 3. It appears "stannum (SN)" is intended to be --samarium(Sm)--. Appropriate correction is required.

Claims 3, 4, and 7 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. In claim 4, all the alkaline-earth metals are listed in the group such that claim 4 fails to further limit claim 1. In claim 3, if the 35 U.S.C. 112 rejections and objections are corrected, it would appear all the lanthanides will be listed such that claim 3 would fail to further limit claim 1.

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1754

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-7 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tao (U.S. 2002/0015877).

Tao teaches a materials for solid state cathode (paragraph 0011, lines 1-3) wherein said materials having general form as $\text{La}_x\text{A}_a\text{B}_b\text{C}_c\text{O}_d$ wherein A is an alkaline earth metal, B is selected from the group consisting of scandium, yttrium and a lanthanide metal, C is selected from the group consisting of iron, cobalt, nickel, copper, and zinc, x is from 0 to about 1.5, a is from 0 to about 0.5, b is from 0 to about 0.5, c is from 0 to about 0.5, and d is between about 1 and about 5 (paragraph 0011) wherein at least one of x, y, a, b, and c is greater than zero (this meets the limitation wherein copper is partly converted to trivalence ion as met by the formula CuO_3 , paragraph 0011, lines 16-18) and the materials for cathode in a solid oxide fuels cell is operable at a temperature of 400°C to 2000°C (paragraph 0007, lines 8-10). Tao teaches introducing ions having valence numbers of less than four in a lattice structure (trivalent copper is an ion having a valence number of less than four, paragraph 0037, lines 25-

Art Unit: 1754

30) in a lattice structure for the purpose of having extra oxygen anion vacancies in the crystal lattice (paragraph 0037, lines 27-30). Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide introducing ions having valence numbers of less than four in a lattice structure (trivalent copper is an ion having a valence number of less than four, paragraph 0037, lines 25-30) in a lattice structure in Tao in order to have extra oxygen anion vacancies in the crystal lattice (paragraph 0037, lines 27-30) as taught by Tao.

As to the limitation of doping, converting, forming, utilizing, compounding, and obtaining, it appears that the instantly claimed product by process is the same as that which is claimed (materials for cathode in solid oxide fuel cells). When the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct and not the examiner to show the same process as making. *In re Brown*, 173 USPQ 685 and *In re Fessman*, 180 USPQ 324. Tao teaches materials for cathode in solid oxide fuel cells having the form as $\text{La}_x\text{A}_a\text{B}_b\text{C}_c\text{O}_d$ as described above such that the structure of the prior art is substantially similar as the claimed invention.

Claims 1-7 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Takanishi et al. (U.S. 5679481).

Takanishi et al. teach a cathode material expressed by the general formula $\text{Li}_{1-x-a}\text{A}_x\text{Ni}_{1-y-b}\text{B}_y\text{O}_2$ where A is strontium or barium or is at least two kinds of alkaline earth metal element, B is at least one kind of transition metal element, X is greater than 0 and

Art Unit: 1754

less than or equal to 0.1 and Y is greater than 0 and less than or equal to 0.30, a is greater than or equal to -0.10 and less than or equal to 0.10, b is greater than or equal to -0.15 and less than or equal to 0.15 (col. 4, lines 35-60). Takanishi et al. teaches it would be obvious based on the reasoned explanation that structure of copper in the cathode would necessarily have different valences as a randomized structure such that part of the copper would be trivalence copper ion.

As to the limitation of the operating temperature, Takanishi et al. teach a material with the same structure of the claimed invention such that the material of Takanishi et al. has all the structural limitations of the claimed invention.

As to the limitation of doping, converting, forming, utilizing, compounding, and obtaining, it appears that the instantly claimed product by process is the same as that which is claimed (materials for cathode in solid oxide fuel cells made by doping, forming, and converting). When the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct and not the examiner to show the same process as making. *In re Brown*, 173 USPQ 685 and *In re Fessman*, 180 USPQ 324. Takanishi et al. teach a cathode material expressed by the general formula $\text{Li}_{1-x-a}\text{A}_x\text{Ni}_{1-y-b}\text{B}_y\text{O}_2$ as described above such that the structure of the prior art is substantially similar as the claimed invention.

Conclusion

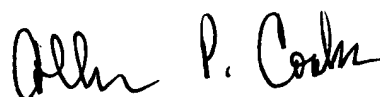
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul A. Wartalowicz whose telephone number is (571) 272-5957. The examiner can normally be reached on 8:30-6 M-Th and 8:30-5 on Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Paul Wartalowicz
May 24, 2006



COLLEEN P. COOKE
PRIMARY EXAMINER